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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/492,373	01/27/2000	Yuzo Horikoshi	991444	9795

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

14

DATE MAILED: 11/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AS 14

Office Action Summary

Application No.

09/492,373

Applicant(s)

HORIKOSHI ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-10, 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. All outstanding rejections and objections except for those described below are overcome by applicants' amendment filed 8/14/02.

This office action is non-final in light of the new grounds of rejection against the present claims, namely, the rejection of claim 15 by Nguyen et al. (U.S. 6,248,805).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-2, 4-10, and 14-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention

Claims 1, 14, 16, and 17 have each been amended to recite "5 wt% or more of polymeric monomer including a polar group". It is the examiner's position that this change fails to satisfy the written description requirement under 35 USC 112, first paragraph since there does not appear to be a written description requirement for this phrase in the application as originally filed, *In re Wright*, 866 F.2d 422, 9 USPQ2d 1649 (Fed. Cir. 1989) and MPEP 2163.

Applicants point to Table 1 as support for this phrase. However, page 11, line 19 discloses that it is preferable to use copolymer characterized in being synthetically prepared "from at least one kind of radical polymeric monomer having a polymer group selected from

styrene and styrene derivative, (b) alkyl acrylate, alkyl methacrylate and derivatives thereof".

There is no disclosure or suggestion that the copolymer includes in addition to styrene and alkyl (meth) acrylate "5 wt% or more of polymer monomer including a polar group". It is noted that Table 1 discloses copolymers obtained from monomers, in addition to styrene and alkyl (meth) acrylate, such as (meth)acrylic acid, vinyl pyridine, 2-hydroxypropyl-N,N,N-trimethylammonium chloride acrylate, and N,N-diallylmethylammonium chloride, in amounts of 5%, 7%, and 10%. However, these few specific embodiments do not provide support for applicant to broadly recite "polymeric monomer containing polar groups" in the claims. Further, the recitation of "5 wt% or more" clearly encompasses any amount greater than or equal to 5% such as 20%, 50%, 80%, etc. for which there is clearly no support in the specification. Based on the disclosure in Table 1, applicants only have support for the recitation of amounts of 5, 7, and 10% of the recited monomers.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The scope of claim 5, which depends on claim 1, is confusing given that claim 1, as presently amended, recites limitation regarding softening point identical to that in claim 5.

Should claim 5 be cancelled?

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-2, 4-10, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (U.S. 6,248,805) in view of Patel et al. (U.S. 5,977,210) and Fujisawa et al. (U.S. 5,997,136).

Nguyen et al. disclose an ink jet ink comprising (i) 0.1-10% polymer which has the structure $A_xB_yC'_z$ where A is a hydrophobic monomer such as alkyl (meth)acrylate, B is a hydrophobic monomer such as styrene, and C' is a monomer which has a highly polar functional group including (meth)acrylic acid, (ii) solvent which is liquid at room temperature, and (iii) colorant which is a dye or pigment wherein the colorant is dispersed in the polymer. The polymer is obtained from 5-95% monomer A, 5-95% monomer B, and 0-30% monomer C. The polymer has glass transition temperature of -25 to 110°C and is produced using emulsion polymerization. The ink is printed using an ink jet printer which would intrinsically possess an ink cartridge to store the ink. It is also disclosed that in one embodiment, the polymer encapsulates the colorant so that the colorant clearly absorbs on or coats the surface of the polymer, however, it is further disclosed that there is no limit to the type of association between the colorant and the polymer. Further, given that all the ingredients are mixed together when forming the ink, is clear that the colorant is intrinsically dispersed in the solvent (col.4, lines 39-48 and 52-53, col.5, lines 2-12, 18-20, and 25-34, and col.6, lines 8-20, 26-36, and 46-50, col.7,

lines 34-55, col.10, line 48, col.13, lines 58-60, col.19, lines 35 and 54-61, col.22, lines 8-10, and col.26, line 66-col.27, line 15).

Although there is no explicit disclosure in Nguyen et al. that the surfactant covers a surface of the copolymer, given that the surfactant and copolymer are mixed together in Nguyen et al. (see examples), it would have been natural for one of ordinary skill in the art to infer that the surfactant intrinsically covers a surface of the copolymer.

The difference between Nguyen et al. and the present claimed invention is the requirement in the claims of (a) the volume average particle diameter of the polymer, (b) softening temperature of the polymer, and (c) piezo-type ink jet head.

With respect to difference (a), on the one hand, given that Nguyen et al. produces the polymer by emulsion polymerization as presently claimed, it would have been natural for one of ordinary skill in the art to infer that the polymer intrinsically possesses the same volume average particle diameter as presently claimed, and thus one of ordinary skill in the art would have arrived at the claimed invention.

On the other hand, Patel et al., which is drawn to ink jet inks, disclose the use of polymer having volume average particle size of 0.1-1 micron in order to produce an ink that will not clog the printer nozzles (col.3, lines 14-15 and col.4, lines 57-59).

In light of the motivation for using copolymer having specific volume average particle diameter disclosed by Patel et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use polymer with such volume average particle diameter in the ink of Nguyen et al. in order to produce an ink which will not clog the printer nozzles, and thereby arrive at the claimed invention.

With respect to difference (b), on the one hand, given that Nguyen et al. discloses copolymers identical to those presently claimed, i.e. obtained from the same types and amounts of monomers, it would have been natural for one of ordinary skill in the art to infer that the polymers intrinsically possess the same softening temperature as presently claimed, and thereby arrive at the claimed invention.

On the other hand, Fujisawa et al., which is drawn to ink jet inks, disclose that the softening temperature of polymers utilized in ink jet inks range from 50⁰ -120⁰ C wherein such temperature allows the ink to be heated quickly so that the ink dot is formed before penetration of ink into recording medium occurs so that feathering of the ink on the recording medium is prevented (col.3, lines 13-35).

In light of the motivation for using polymer with specific softening temperature disclosed by Fujisawa et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use polymer with such softening temperature in the ink of Nguyen et al. in order to produce an ink which does not feather, and thereby arrive at the claimed invention.

With respect to difference (c), Nguyen et al. disclose the use of thermal ink jet printers (col.2, lines 46-52), however, there is no explicit disclosure of the use of printers containing piezo-type inkjet head as presently claimed.

Patel et al., which is drawn to ink jet ink, disclose the equivalence and interchangeability of thermal ink jet printer, as disclosed by Nguyen et al., with piezoelectric ink jet printer, as presently claimed, as devices used to cause droplets of ink to be ejected in an imagewise pattern on a substrate to generate images (col.7, lines 36-43).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use piezoelectric ink jet printer to print the ink of Nguyen et al., and thereby arrive at the claimed invention.

Response to Arguments

8. Applicants' arguments filed 8/14/02 have been fully considered, but they are not persuasive.

Specifically, applicants argue that the cited references do not teach or suggest recitation in present claims or the advantages of the recited features.

However, it is noted that Nguyen et al. disclose an ink jet ink comprising (i) 0.1-10% polymer which has the structure $A_xB_yC'_z$ where A is a hydrophobic monomer such as alkyl (meth)acrylate, B is a hydrophobic monomer such as styrene, and C' is a monomer which has a highly polar functional group including (meth)acrylic acid, (ii) solvent which is liquid at room temperature, and (iii) colorant which is a dye or pigment wherein the colorant is dispersed in the polymer. The polymer has glass transition temperature of -25 to 110°C and is produced using emulsion polymerization. The polymer is obtained from 5-95% monomer A, 5-95% monomer B, and 0-30% monomer C.

Attention is drawn to col.19, line 35 which discloses copolymer obtained from 40% styrene, 40% ethyl acrylate, and 20% acrylic acid. Such copolymer is obtained from type and amounts of monomers identical to those presently claimed. Further, it is calculated using glass transition temperatures of styrene, ethyl acrylate, and acrylic acid of

100 °C, -22 °C, and 106 °C, that the glass transition temperature of such copolymer is 40 °C which falls within the glass transition temperature presently claimed.

It is agreed that Nguyen et al. do not disclose volume average particle size or softening point of copolymer. However, this is why Nguyen et al. is used in combination with Patel et al. which teaches volume average particle size of copolymer and Fujisawa et al. which teach copolymer softening point.

Further, with respect to the volume average particle diameter as noted in paragraph 7 above, given that Nguyen et al. produces the polymer by emulsion polymerization as presently claimed, it would have been natural for one of ordinary skill in the art to infer, absent evidence to the contrary, that the polymer intrinsically possesses the same volume average particle diameter as presently claimed, and thus one of ordinary skill in the art would have arrived at the claimed invention. Further, with respect to the softening point of the polymer, given that Nguyen et al. disclose polymer obtained from identical types and amounts of monomer, it would have been natural for one of ordinary skill in the art to infer, absent evidence to the contrary, that that the polymer would intrinsically possess same softening point as presently claimed.

While applicants argue that cited references do not teach or suggest presently claimed invention or the advantages associated with the present invention, applicants have provided no evidence or statements to support their position.

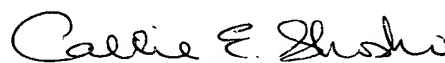
In light of the above, it is the examiner's position, absent evidence to the contrary, that combination of references, i.e. Nguyen et al. in view of Patel et al. and Fujisawa et al., do in fact disclose ink as presently claimed.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie E. Shosho
Examiner
Art Unit 1714

CS
November 1, 2002